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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,026	02/25/2004	Hans-Jurgen Nolte	PO-8004/LeA 36,450	7133
157 7590 01/07/2008 BAYER MATERIAL SCIENCE LLC 100 BAYER ROAD PITTSBURGH, PA 15205			EXAMINER SERGENT, RABON A	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 01/07/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/789,026

Applicant(s)

NOLTE ET AL.

Examiner

Rabon Sergent

Art Unit

1796

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on December 20, 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-9,24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9,24 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Art Unit: 1796

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 21, 2007 has been entered.

2. Claims 1, 2, 4-9, 24, and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. With respect to the claimed continuous process, applicants have claimed that the volumetric flow rate of dispensing the coating is lower than the volumetric flow rate of the coating mixture from the mixing nozzle to the homogenizer. However, it appears that this requirement violates the Law of Conservation of Mass. Since liquids are incompressible and since the volume of a liquid will essentially be constant under a constant temperature condition, it is accepted that volumetric flow rates are comparable to mass flow rates; therefore, it is unclear how an exit flow rate can differ from a feed flow rate. It is an axiom of chemical engineering practice that the mass of all components entering a system must equal the mass of all components leaving the system; however, applicants' claim terminology does not adhere to this requirement. The existence of the recirculation stream can not account for the difference since the recirculation stream is a closed loop lacking true or independent feed and exit streams. The only way that applicants' claim requirements can be met is by having a storage vessel or by having a homogenizer that constantly increases volume to hold the difference between the

Art Unit: 1796

respective flow rates. In the first case, if a storage vessel is used, then it is questionable if the system can be considered continuous, since the vessel will have a finite capacity. In the second case, it is unclear how one would produce a homogenizer having a constantly increasing volume.

3. Claims 1, 2, 4-9, 24, and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants' claim language within the last three lines of claim 1 is unclear in that it is unclear exactly where the exit line from the homogenizer is split between the dispensing line and the recirculation line. It is unclear if the split occurs before or after the point at which the volumetric flow rate is lower than the volumetric flow rate of the mixture from the nozzle to the homogenizer.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1796

5. Claims 1, 2, 4-9, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/05860 in view of Kahl et al. ('518) and Bock et al. ('419) and Burke, Jr. ('698 or '700 or '701) and Khungar et al. ('142) and Dong et al. (US 2001/0012872).

WO 01/05860 discloses the continuous production of aqueous two-component polyurethane emulsion coating compositions, wherein the polyisocyanate and polyol are initially mixed in a mixing nozzle upstream of a jet disperser that performs the same function as applicants' homogenizer. See abstract; page 4, lines 9-19; page 5, lines 1-5; and Figure 1.

6. WO 01/05860 is silent regarding applicants' claimed recirculating or recycle feature; however, the use of recycle streams through homogenizers or repeat homogenization to improve dispersions and emulsions was known at the time of invention. This position is supported by the cumulative teachings of the secondary references. Kahl et al. disclose the homogenization of two component aqueous polyurethane coating compositions by forcing the aqueous two-component mixture through a jet disperser. Kahl et al. further disclose an embodiment wherein the stream recycles back to be introduced into the jet disperser (homogenizer) again. See Figure 5. The Burke, Jr. references disclose at column 24, the use of homogenizers in combination with recycle to improve such emulsion properties as particle size and particle size distribution. Khungar et al. disclose at column 5, lines 39+ that recirculation through a homogenizer is useful to obtain optimum homogenization of monomer mixes. Dong et al. disclose within paragraph [0015] the use of a recycle loop in combination with homogenization to ensure emulsion stability. Furthermore, both Kahl et al. (column 6, lines 49-52) and Bock et al. (column 5, line 66 through column 6, line 8) disclose the use of homogenizers in series, which is considered to be analogous to using a recycle stream, in terms of repeatedly subjecting the composition to

Art Unit: 1796

homogenization. Therefore, given these cumulative teachings, the position is taken that it would have been obvious to practice the method of WO 01/05860 using a recycle stream to reintroduce the composition into the homogenizer, so as to obtain improved dispersions. Furthermore, though the references fail to disclose applicants' claimed flow rates and gear pumps, the position is taken that the selection of such conditions and equipment amounts to the obvious selection and optimization of conventional chemical engineering practices and equipment. Furthermore, to the extent that the language, added by the amendment of June 25, 2007, can be understood, the position is taken that the language simply describes an inherent characteristic of a recycle stream, in that the flow rate prior to the recycle exit must exceed the flow rate after the recycle exit if the respective streams are to flow. In other words, if the exit flow rate of the system is equal to the flow rate prior to the recycle exit stream, then no recycle flow can occur, without violating the conservation of mass law.

7. Applicants' arguments and amendments filed within the submission of November 21, 2007 have been carefully considered; however, the rejection has been maintained for the following reasons. Applicants have essentially argued that the references do not teach or suggest a continuous process utilizing a mixing nozzle and a homogenizer in which a portion of the coating mixture is recycled from the outlet to the inlet of the homogenizer and a portion of the coating mixture is dispensed during continuous operation. In response, the examiner maintains that the cumulative teachings and advantages of using recycle disclosed within the secondary references would have motivated one to utilize recycle, in general, within virtually any mixing process, whether continuous or batch, so as to realize the advantages conveyed by recycle, such as improving such properties as particle size, particle size distribution, homogeneity, and

Art Unit: 1796

emulsion stability. While applicants have essentially argued the separate teachings of the secondary references, the position is maintained that applicants have failed to appreciate the overall or cumulative teachings within the references concerning the advantages of recycle. However, the position is maintained that the skilled artisan would have fully appreciated these cumulative teachings and reasonably expected the use of recycle to yield an improved product and process. In summation, the evidence of obviousness outweighs the evidence of non-obviousness. Applicants have simply not provided a convincing argument that it would not have been obvious to the skilled practitioner to utilize the well-known chemical engineering practice of recycle so as to ensure the optimal homogenization of the composition and to realize the benefits associated with repeated homogenization. Additionally, applicants' response concerning the failure of the references to teach continuous processes fails to appreciate the fact that it has been held that it is *prima facie* obvious to produce a continuous process in light of the batch process of the prior art. *In re Dilnot*, 319 F.2d 188, 138 USPQ 248 (CCPA 1963) (MPEP 2144.04(V)(E)). Lastly, applicants' arguments concerning the use of homogenizers in series and the associated pressure drop continue to not be well taken. It is initially noted that applicants' claims do not exclude additional homogenizers. Despite applicants' arguments, applicants have failed to establish that the recycle step as claimed is not analogous to the use of homogenizers in series. Despite applicants' arguments, as evidenced by Kahl et al. at column 2, line 63 through column 3, line 4, one of ordinary skill would be apprised of how to deal with the pressure drop.

Any inquiry concerning this communication should be directed to R. Sergent at telephone number (571) 272-1079.

R. Sergent
December 2, 2007


RABON SERGENT
PRIMARY EXAMINER